



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/530,982

10/11/2005

Yoshiaki Arata

49288.1000

9255

20322 7590 04/23/2007  
SNELL & WILMER L.L.P. (Main)  
400 EAST VAN BUREN  
ONE ARIZONA CENTER  
PHOENIX, AZ 85004-2202

EXAMINER

AWAI, ALEXANDRA F

ART UNIT

PAPER NUMBER

3663

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

04/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,982	<b>Applicant(s)</b> ARATA, YOSHIAKI	
	<b>Examiner</b> Alexandra Awai	<b>Art Unit</b> 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS; WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 2/8/2007 have been fully considered but they are not in every respect persuasive. The amendments to claims 1, 3, 5 and 10, as well as the comments regarding the drawings, are acknowledged. Those objections that have been overcome are omitted from this Office Action and are considered withdrawn. Claims 1-10 have been examined.

Examiner asserted in the previous Office Action that the "conventional established theory" of solid-dissolving deuterium in metals (p. 3) and the "phenomenon that elasticity emerges in the bond between atoms of the material" (p. 8). With regard to the "conventional established theory" of solid-dissolving deuterium in metals, Examiner accepts Applicant's assertion that because this theory has allegedly been disproved by the invention, it is not critical or essential to the invention. With regard to the "phenomenon that elasticity emerges in the bond between atoms of the material," Examiner respectfully disagrees with Applicant's argument, which is encompassed by the following statement:

"[I]f the specification describes the invention, and how to make and use the invention, it should not be rejected for enablement simply because there is an assertion that no explanation is given to the theory behind the working of the invention. Understanding the reason how a particular invention works is not the requirement, rather how to work it is the requirement" (Remarks, p. 7).

Applicant has presumed without justification an essential consideration of 35 U.S.C. 112, that being the issue of whether a person of skill in the relevant art would be able to make and use the invention contemplated by the inventor. The standard for determining that the specification meets the enablement requirement is whether or not the experimentation needed to practice the

Art Unit: 3663

invention is undue or unreasonable. *Mineral Separation v. Hyde*, 242 U.S. 61, 270 (1916). On page 5 of the previous Office Action, Examiner began discussing factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is undue.

Examiner has not simply found that the invention as disclosed is not enabled because no explanation is given to the theory behind the working of the invention. Rather, Examiner has set forth numerous technical issues related to the aforementioned factors that tend to show that the instant invention relies on phenomena that are implausible, if not impossible, and that therefore, undue experimentation would be required in order to make and use the invention. In fact, in the Department of Energy's "Report of the Review of Low Energy Nuclear Reactions," numerous reviewers found sound scientific reasons to doubt claims substantially similar to Applicant's, and either called upon researchers to continue experimental studies in order to substantiate the claims or stated that even with further research along a similar vein, no advancements would be likely (p. 5). Work has even been done to replicate experiments by Arata specifically relating to  $^4\text{He}$  production by fusion in deuterated Pd with largely negative results ("2004 U.S. Department of Energy Cold Fusion Review Reviewer Comments," p. 5).

An explanation of the theory behind the working of the invention would be a first step toward proving that the technical issues that appear to preclude a credible utility have been positively resolved. Note that while Applicant has heretofore failed to provide a scientific theory for *why* the nano-ultrafine particles are able to make what is currently thought to be *impossible*, or at least highly unlikely; possible, Applicant nevertheless asserts that the postulated phenomena actually occur in the lattice (see Fig. 7) despite the fact that these phenomena have not been

Art Unit: 3663

observed, but are based on the unexplained theory. Applicant's claimed invention hinges upon these unobserved phenomena, which at best are no more than speculation based on dubious experimental results. That is, Applicant has claimed a method that includes steps that would not be proven to occur, even if Applicant's experimental results were accepted as fact, which they are not given the longstanding controversy in this particular field (e.g., note the apparently conflicting evidence of Dignan et al. and the aforementioned Reviewer Comments).

With regard to certain technical questions raised by Examiner in the previous Office Action, Applicant's responses are largely unsatisfactory, especially in view of Examiner's requirement of sufficient substantiating evidence and characterization of the state of the art as found on page 5 of that Office Action. That is, Applicant provides only baseless conclusory statements and speculation. Applicant's unsupported assertion concerning issues (a)-(d) that "[t]he nano-ultrafine particles allow hydrogen isotope atoms to be dissolved within the atomic gaps of the particles to distances equal to or smaller than the internuclear bonds between the same two types of hydrogen isotope atoms as a single molecule" (Remarks, p. 8) is an example of an allegation that borders on the incredible or would not be readily accepted by a substantial portion of the scientific community. Examiner has established that where the utility of the invention is based upon such an allegation, as in the current case, sufficient substantiating evidence of operability must be submitted by Applicant. Applicant's unsupported assertions that the specification provides sufficient enabling guidance and that the invention actually works (Remarks, pp. 9 and 10) are not sufficient to overcome the objections to the specification or rejections under 35 U.S.C. 112, first paragraph for the specific reasons set forth on pages 5 and 6 of the previous Office Action, which Applicant has failed to directly address. That is, Applicant

Art Unit: 3663

has certainly set forth steps and means to practice a method, but there is insufficient evidence that the method produces the claimed concrete results, especially through fusion facilitated by nano-ultrafine particles.

Applicant states that because of the differences between conventional deuterium-deuterium fusion and the implausible and unproven means of fusion posited in the instant disclosure, it is “logical to assume” that it would be possible to favor the unlikely reaction wherein  $^4\text{He}$  is produced. First, Applicant has yet to show that packing atoms together within nano-ultrafine particles as disclosed in the specification results in any reaction whatsoever. Second, Applicant has yet to show that the anticipated 23.8 MeV  $\gamma$ -ray registers as lattice energy, or that the submitted experimental results of heat and reaction products are due to the fusion process as described in the specification. Third, even assuming that such packing allows fusion to occur, it would predictably achieve the same end as a collisional process – i.e., in both the conventional process and Applicant’s alleged process, the goal is to bring the atomic nuclei close enough together that the (attractive) strong force is able to act on the nuclei, thereby fusing them. For the conventional process, it is the kinetic energy of the nuclei that overcomes the Coulomb repulsion, while in Applicant’s alleged process it is the nature of the nano-ultrafine particles that would achieve this same phenomenon. Since in either case it is inevitably the strong nuclear force that effects fusion, there is no reason to assume *a priori* that any act of man can change the branching probabilities with regard to fusion reactions. Rogers et al. state that neutron or proton emission is favored over gamma radiation for fusion of deuterium nuclei by about eight or nine orders of magnitude (p. 484) and Dignan et al. were not able to observe a peak at 23.8 MeV for  $\gamma$ -rays in experiments using highly deuterated palladium (see Abstract).

Art Unit: 3663

With regard to issue (f), although Applicant stated the following:

“The well-known DD nuclear fusion *reaction* which causes a radical impact of deuterium atoms to generate T and neutrons is extremely dangerous, and therefore, is not desirable in terms of industrial applicability and conservation of the environment” (specification, p. 21, emphasis added),

Examiner accepts Applicant’s admission that conventional deuterium-deuterium fusion *reactions* produce both tritium and neutrons, albeit through separate reaction (Remarks, p. 9). Examiner also acknowledges that Applicant believes that the “high pressure gas” of issue (g) is transfer medium (e.g., H<sub>2</sub>O, D<sub>2</sub>O, etc.) vaporized by fusion heat.

With regard to the first issue raised in the rejection of the claims under 35 U.S.C. 112, second paragraph, Examiner respectfully disagrees with Applicant’s arguments, which include the following:

“It is appreciated that one skilled in the art would easily be able to adjust the amount and type of energy provided to initiate the fusion reaction based on the composition of the metal nano-ultrafine particles or metal alloy composites, which would determine the spacing of the dissolved hydrogen isotope atoms, and hence the activation energy necessary” (Remarks, pp. 10 and 11).

There is no credible reason identified by Applicant or identifiable by Examiner to appreciate any such thing. As stated before, Applicant has not yet conclusively shown or theorized how the composition of the metal nano-ultrafine particles or metal alloy composites determine spacing of dissolved hydrogen isotope atoms. Examiner has already established that the art of the present invention is so new and controversial that it cannot be considered to have a body of knowledge associated, much less predictability of results (Office Action dated 10/4/2006, p. 6).

Accordingly, there are no artisans sufficiently skilled in the art to make the adjustment suggested by Applicant. Furthermore, *adjusting* requires some starting value for the skilled artisan to make iterative changes based on. Applicant has merely claimed “applying energy to the hydrogen

Art Unit: 3663

condensate” (e.g., claim 1), without claiming even a broad range of energy levels or a means of applying the energy. It is clear from the disclosure that not every conceivable application of energy will generate heat, even if Applicant’s theory of the invention’s operation is accepted. It is therefore possible to particularly point out and specifically claim the subject matter of the invention without unduly restricting the invention, because the claimed invention is entirely unrestricted in this respect, while the disclosed invention is restricted. The scope of the claimed invention far outstrips the scope of the disclosed invention, thus rendering the claimed invention unclear.

Applicant’s arguments with regard to the omitted steps involved in condensing the hydrogen isotope atoms and generating heat are similarly unpersuasive. Applicant provides the following statement:

“Applicant further asserts that the method of preparing the hydrogen condensate is not essential, because it is the spacing of the hydrogen isotope atoms that are essential, and this directly correlates to the composition of the metal nano-ultrafine particle or metal alloy, and the dissolving of the hydrogen isotope atoms therein” (Remarks, p. 11).

Clearly, if the spacing of the hydrogen isotope atoms is essential, and it directly depends on the dissolving of hydrogen isotope atoms in a composition of the metal nano-ultrafine particle or metal alloy, then the step of dissolving of hydrogen isotope atoms, which is equivalent to “preparing the hydrogen condensate” is essential by Applicant’s own admission. The specific range of conditions used for a particular composition do not unduly limit the claims because, even if Applicant’s theory is accepted, there exists only a specific range of conditions for a particular composition that will permit the generation of heat as claimed. As discussed for the previous 112, second paragraph issue, there are no claimed base values for a skilled artisan to adjust, and no reason to believe that the skilled artisan has a base of knowledge regarding



Art Unit: 3663

configuring the metal atoms and hydrogen isotope atoms as claimed that would enable the artisan to make any adjustments. The “heat generating step” is clearly essential based on the preamble of the independent claims, and moreover it is not omitted. The omitted steps are those required to generate heat by applying energy. Applicant’s assertion that no step beyond applying the energy is required to generate heat is acknowledged, although it remains unclear how the anticipated fusion products instantaneously generate thermal energy.

With regard to internuclear and inter-atomic spacings, Examiner is fully aware of the meaning Applicant intends to communicate, and considers this meaning unduly broad. Indeed, Applicant objects to Examiner’s interpretation that the claims apparently include any conceivable value that may be encompassed by “smaller than or equal to an internuclear spacing of a molecule consisting of two hydrogen isotope atoms” (Remarks, p. 13) as unduly broad. However, since, as stated in the previous Office Action, the internuclear spacing “has not been established in the claim, and may be variable depending on such conditions as temperature and the molecule’s proximity to other molecules” (p. 7), the claims are so unduly broad that they clearly encompass configurations that Applicant has asserted do not achieve generation of heat by fusion. Examiner’s interpretation of this unduly broad recitation is completely reasonable. The subject matter of the invention – i.e., configurations in which heat generation by nano-ultrafine particle-facilitated fusion is possible according to Applicant – has therefore not been particularly pointed out. Accordingly, the claims do not meet the statute.

Applicant asserts that the utility of the invention is clearly described in the specification, and is well known to one skilled in the art. However, this statement does not address the substance of the rejection, which is whether the utility is *credible* or *well established*. Although it

Art Unit: 3663

may appear to Applicant that the rejection is based *merely* on Examiner's opinion that the invention does not work, this is not precisely the case. Examiner is of the opinion that the invention does not work, but the rejection is based on the inadequacy of the disclosure as established by scientific facts. The theory upon which the operation of the disclosed and claimed invention is based has not been accepted by the scientific community, and neither have experimental results of the nature that Applicant has provided. Those of skill in the art, such as the aforementioned DOE reviewers, have rejected or seriously questioned the science behind fusion processes ostensibly observed from deuterated Pd. Additionally, Examiner has questioned the scientific basis of the particularly disclosed instant invention, and Applicant has replied with groundless assertions rather than reasons or evidence. The "foregoing arguments" relating to the issue of inoperativeness are similarly unpersuasive. Accordingly, the utility described in the invention is neither credible nor well established, the invention is still considered inoperative, and so the claims fail to meet the statute.

Regarding Examiner's rejection of the claims based on prior art, Examiner notes that Applicant asserts that Examiner's interpretation of the claims is unduly broad, but provides no reason justifying this assertion. Applicant goes on to argue that the "foregoing arguments addressing the previous rejections" render the rejection moot. However, it is not clear how Applicant's unpersuasive arguments regarding the enablement and utility of the invention prove that it is novel, or somehow otherwise invalidate a finding that the invention is not novel. With regard to the reference not disclosing fusion of hydrogen isotope atoms to produce usable energy, Applicant has failed to address Examiner's application of inherency reasoning. Applicant has provided no specific arguments against the previous rejection of claims 4 and 9.

*Drawings*

2. Figs. 1 and 3-11 are objected to because the allegedly black and white photographs are not of sufficient quality so that all details in the photographs are reproducible in the printed patent (37 CFR 1.84(b)) and because of the presence of unacceptable shading (37 CFR 1.84(m)) in the black and white drawings. In fact, the quality is so poor that Examiner initially concluded that they must be reproductions of color photographs or drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Specification*

3. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The specification is objected to under 35 U.S.C. 112, first paragraph, because concepts and methods critical or essential to the practice of the invention are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Instead, the “phenomenon that elasticity emerges in the bond between atoms of the material” (p. 8) has been improperly incorporated by reference as set forth in section 3 of this Office action. This issue is crucial and essential to the working of the invention, because it is the reason that the nano-ultrafine particle-facilitated fusion allegedly works. If an explanation of such a central issue is unnecessary because “[u]nderstanding the reason how a particular invention works is not the requirement” of 35 U.S.C. 112, first paragraph, it is not clear how Applicant can reasonably claim steps based only upon this understanding. That is, the steps involving the “phenomenon”

Art Unit: 3663

have not been observed, but rather are speculations that hinge entirely upon the “understanding” Applicant argues is not essential.

6. The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The specification does not describe the subject matter of the invention in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This is because certain concepts promulgated as facts in the specification are counter to the current understanding of quantum physics, but no explanation is given to resolve the conflicting issues. The primary issues in contention include how the deuterium atoms are brought within 0.6 Å or less of one another simply by being in a relationship with metal atoms, and how the  ${}^2\text{D} + {}^2\text{D} = {}^4\text{He} + \text{lattice energy (23.8 MeV)}$  reaction proceeds.

According to the current understanding, nuclei must overcome the Coulomb barrier in order to fuse, and once nuclei are brought within the interaction radius, the strong interaction forces fusion to occur. How is it that the mere presence of palladium atoms, for example, supplies the several KeV of energy required to overcome the Coulomb repulsion (less a 300 Watt, 19 kHz ultrasonic wave applied for an indeterminate amount of time) between deuterons, or does it somehow reduce the Coulomb repulsion by several orders of magnitude? If so, how? Why is it that deuterium nuclei can be brought to distances within the interaction radius (i.e., range of the strong nuclear force), and yet remain un-fused pending application of some additional energy? Discussions regarding the host and guest of the condensate appear to be baseless speculation setting forth *what* Applicant believes, rather than a reasoned explanation of

Art Unit: 3663

why this belief is justified. For instance, Applicant fails to explain how and why organic compounds can capture and adjust the guest material.

Applicant claims that in the preferred embodiment the energy-producing reaction that takes place is  ${}^2\text{D} + {}^2\text{D} = {}^4\text{He} + \text{lattice energy (23.8 MeV)}$ . However, it is not clear how Applicant avoids the well-known deuterium-deuterium (DD) nuclear fusion reactions that result in ionizing radiation. Indeed, what is well-known about those reactions is that with about 50% probability, DD fusion results in an energetic  ${}^3\text{He}$  particle with a more energetic neutron, and the other half of the time, the result is an energetic tritium particle and a more energetic proton. It is only through a vanishingly small probability (i.e., approaching zero, thereby allowing the other reactions to account for 100% of the branching probability) that  ${}^4\text{He}$  and the accompanying 23.8 MeV gamma ray are likely to result. Even if Applicant were able to affect these branching probabilities, there is no explanation for how the energetic gamma – an extremely penetrating type of radiation – is able to transfer its energy to the lattice.

It is well established that where, as here, the utility of the claimed invention is based upon allegations that border on the incredible or allegations that would not be readily accepted by a substantial portion of the scientific community, **sufficient substantiating evidence** of operability must be submitted by applicant. Note *In re Houghton*, 167 U.S.P.Q. 687 (CCPA 1970); *In re Ferens*, 163 U.S.P.Q. 609 (CCPA 1969); *Puharich v. Brenner*, 162 U.S.P.Q. 136 (CA DC 1969); *In re Pottier*, 152 U.S.P.Q. 407 (CCPA 1967); *In re Ruskin*, 148 U.S.P.Q. 221 (CCPA 1966); *In re Citron*, 139 U.S.P.Q. 516 (CCPA 1963); and *In re Novak*, 134 U.S.P.Q. 335 (CCPA 1962). Although it is axiomatic that an inventor need not comprehend the scientific principles on which the practical effectiveness of his invention rests, if the examiner comprehends that the inventor

Art Unit: 3663

has submitted inaccurate or implausible information, ***the burden is on the applicant to show that the examiner is mistaken, and that the invention possesses practical effectiveness, and this showing requires evidence.*** Note that there are many factors recognized by the MPEP that are to be considered when determining whether there is sufficient evidence to support a determination that a disclosure satisfies the enablement requirement. See MPEP 2164.01(a).

As stated in MPEP § 2164.03, the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Other factors contributing to lack of enablement may include the breadth of the claims, the nature of the invention, the existence of working examples and the quantity of experimentation needed to make or use the invention based on the content of the disclosure (see MPEP § 264.01(a)). The art of the present invention (i.e., a method of successfully generating heat via production of  $^4\text{He}$  and “lattice energy” using a hydrogen condensate) is so new that it cannot be considered to have a body of knowledge associated with it, much less predictability of results (see *Chiron Corp. v. Genentech Inc.*, 363 F.3d 1247, 1254, 70 USPQ 2d 1321, 1326 (Fed. Cir. 2004)). Applicant asserts that the technology is new, but does not disclose essential details as discussed above. Since Applicant has not established the operability of the presently claimed invention, it is considered that the invention is inoperable and therefore lacking in utility.

It is thus considered that the examiner has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the applicant itself to inform, not to direct others to find out (i.e., “adjust”; Remarks, pp. 10 and 11) for themselves; *In re Gardner et al.*, 166 U.S.P.Q. 138, *In re Scarbrough*, 182 U.S.P.Q. 298. Note that the disclosure

Art Unit: 3663

must enable a person skilled in the art to practice the invention without having to design structure not shown to be readily available in the art; *In re Hirsch*, 131 U.S.P.Q. 198.

***Claim Rejections - 35 USC § 112***

7. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Concepts and methods critical or essential to the practice of the invention, but not included in the claims are not enabled by the disclosure as set forth in sections 1 and 6 of this Office action. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is clear that a certain amount of energy is at least required for practicing the method, yet the claims are inclusive of the application of any conceivable level of energy. The claims therefore fail to particularly point and specifically claim the subject matter of the invention.

Claims 1, 3, 6, and 8 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are those involved in condensing the hydrogen isotope atoms. The claims are additionally unclear because “an internuclear spacing of a molecule consisting of two hydrogen isotope atoms” has not been established in the claim, and may be variable depending on conditions such as temperature and the molecule’s proximity to other



Art Unit: 3663

molecules. Accordingly, the inter-atomic nuclear distance between the condensed hydrogen isotope atoms is indefinite.

***Claim Rejections - 35 USC § 101***

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-10 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility, as set forth in sections 1 and 6 of this Office Action.

12. Claims 1-10 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zaluska et al. (Appl. Phys. 2000) and admissions by Applicant.

Zaluska et al. disclose hydrogen condensates comprising nano-crystalline metals (see p. 158), including nickel (Fig. 4), palladium (Fig. 5), iron and titanium (p. 160) and zirconium (Fig. 7). As evidenced by the graphs showing weight% of H absorption, a plurality of hydrogen isotope atoms are dissolved among the metal atoms. Given the unduly broad recited range of “smaller than or equal to an internuclear spacing of a molecule consisting of the two hydrogen isotope atoms,” the disclosed hydrides anticipate this feature. Absorption and desorption of the metal hydrides proceed at relatively high temperatures – e.g., 280°C (Fig. 7), indicating the application of heat energy. Applicant admits that the heat generating step “is merely a result of applying an appropriate amount of energy to the hydrogen condensate, which satisfies the interatomic spacing criteria listed in the independent claims, to cause the nuclear fusion of the hydrogen isotope atoms which generates heat” (Remarks, p. 11). If the claimed steps are enabling for causing the hydrogen isotope atoms to fuse with each other, and if this fusion reaction inevitably results in the generating of heat, then it is inherent that the method disclosed by Zaluska – application of heat (energy) to the hydride for desorption – also generates heat by fusion. As to limitations which are considered to be inherent in a reference, note the case law of *In re Ludtke*, 169 USPQ 563, *In re Swinehart*, 168 USPQ 226, *In re Fitzgerald*, 205 USPQ 594, *In re Best et al.*, 189 USPQ, and *In re Brown*, 173 USPQ 685, 688.

Claims 4 and 9 additionally recite a number of means that the generation of the energy may be “based on.” However, Applicant provides no enabling details for employing the “ultrasonic wave, strong magnetic field, high pressure, laser, laser explosive flux-compression, high-density electron beam, high density-current, discharge, and chemical reaction” (specification, p. 4), which essentially encompass most known means of generating energy save

Art Unit: 3663

nuclear fusion itself. This truncated disclosure is considered an implicit identification of the work of another. Applicant is not the inventor of the laser, magnetic field or chemical reaction, and skilled artisans routinely use these means for the application of energy. In fact, the electricity used to power certain claimed means may be considered "based on" chemical reactions if it originates from coal-fired electricity plants. Note MPEP § 2129 [R-3], which states, "A statement by an applicant during prosecution identifying the work of another as prior art is an admission that that work is available as prior art against the claims." Those skilled in the art are well versed in the making and using of all of the claimed means, and so using any of these means therefore amounts to no more than the advantageous application of a known expedient.

### *Conclusion*

15. The prior art made of record and not relied upon in the prior art rejections is considered pertinent to applicant's disclosure.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 3663

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (571) 272-3079.

The examiner can normally be reached on 9:30-6:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA  
April 17, 2007

  
JACK KEITH  
SUPERVISORY PATENT EXAMINER